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# SYSTEM AND METHOD FOR MAPPING PULSE WIDTHS IN A DIGITAL MODULATOR

## BACKGROUND OF THE INVENTION

### Field of the Invention

[0001] The present invention relates generally to improved apparatus and methods for mapping pulse widths in digital modulation circuits, and includes particular applications of these circuits to digital modulators of a type useful in high fidelity audio processing.

[0002] This application is a continuation-in-part of U.S. Patent Application Serial No. 10/642,736, titled "System and Method for Shaping Dither Signals," filed August 19, 2003, <sup>is now a U.S. Patent 6,812,876</sup> the entire disclosure of which is incorporated herein by reference.

### Related Art

[0003] Digital-to-analog converters (DACs) are used to process digital audio signals. Typically digital data signals are received from a digital replay device or over a network, such as a cable television network. The signals are then processed by a DAC in an audio amplifier, cable receiver, or other audio device to produce an analog output within a frequency range that, when connected to a transducer such as a speaker, generates human audible sounds.

[0004] DACs used in high-fidelity audio processing typical include digital modulators that convert highly over-sampled digital values from high precision (16-20 bits) to low precision (1-3 bits), with the objective of substantially eliminating noise from the human audible band.

[0005] To prepare these low precision signals for conversion to analog form, they are mapped into digital sequences to prevent parasitic elements from degrading the signal. This process is known as sequence mapping. An analog signal is then generated from the mapped digital signal and transmitted to audio reproduction equipment.